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Introduction: There is little information on the outcome of HIV+ pts with MM undergoing myeloablative chemotherapy with ASCT
Patients and Methods: 3 male HIV + pts with MM underwent ASCT between June 2005 and December 2009. Median age of 46 years (43-66 years). All received multiagent chemotherapy including bortezomib, dexamethasone, thalidomide, cisplatin, adriamycin, cyclosphosphamise, etoposide (VDT-PACE) and granulocyte colony stimulating factor (GCSF) for mobilization of hemopoeitic peripheral stem cells (HPC). HAART was held during VDT-PACE and HPC. All collected adequate CD 34+ cells/kg (median 25.4x10^6 cells/kg (17.4-31.9 x10^6 cells/kg)) for tandem transplant. HAART was resumed during myeloablative chemotherapy and ASCT. Demographics, HIV viral load (VL), myeloma and HIV outcomes were reviewed.
Results: Median absolute CD4 cell count prior to ASCT was 64 cells/μL (43-264 cells) and median HIV viral load (VL) was 2070 copies/mL (153-9550 copies/mL). Conditioning regimens were melphalan 200 mg/m2 (2 pts) and carmustine, etoposide, adriamycin, melphalan (BEAM, 1 pt). Median viable CD34+ cells/kg infused was 2.96 × 10^6/kg (range 2.58-3.26 × 10^6/kg). Median days to neutrophil and platelet engraftment were respectively 11 (range 7-14) and 18 (range 16-19) days. Treatment-related complications included colitis (3 pts, *C. difficile* in 1), gram negative sepsis (1 pt) and pulmonary aspergillosis (1 pt). Following ASCT, all pts responded, with 2 achieving complete remission which was maintained for 1 year (1 pt) and 2 years (1 pt). One pt died 2 months after transplant after refusing more treatment (cause of death unclear). The median CD4 count 1-3 months after transplantation was 94 cells/uL (range 19-105) and median HIV VL was 1510 copies/mL (range 687-9270). The HIV VL was undetectable at 1 year in 2 pts.
Conclusion: Myeloablative chemotherapy with ASCT can be safely applied to HIV + pts with MM receiving HAART with good outcome at 1-2 years after ASCT.

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AUTOLOGOUS STEM CELL TRANSPLANT (SCT) IN PATIENTS WITH MULTIPLE MYELOMA (MM) OVER THE AGE OF 65 YEARS IS FEASIBLE AND SAFE

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Background: Autologous SCT improves response rates and survival in all newly diagnosed transplant eligible patients with MM. Patients older than 65 years of age are frequently considered ineligible for this procedure.
Materials and Methods: Retrospective analysis was performed on all patients with MM over the age of 65 years who underwent autologous SCT at UMass Memorial medical center since January 2003.
Results: 33 autologous SCT were performed on 27 patients with MM over the age of 65 years. Thirteen (39%) SCT were performed in patients older than 70 years. The median age at SCT was 68 years (range 65-77).24 SCT were performed in males and 10 SCT were performed in females.Myeloma subtype was IgG κ 14 (52%); IgA κ 6 (22%); IgG λ 4 (15%) and light chain myeloma in 3 (11%). Median time from diagnosis to transplant was 11 months (range 4-143). In 13(48%) instances patients had more ≥ 3 therapies prior to their SCT. 10(29%) of the SCT were 2nd transplants and there was one instance of 3rd SCT. Preparative regimen was melphalan 100-200mg/m^2.Median time for neutrophil recovery was 11 days (range 9-12) and platelet recovery was 18 days (range 10-26). No patient died within 100 days post transplant.1 year mortality was 10% (3/31). The survival of patients ≥ 70 years was similar to those ≤ 70 years. 7/15 (46%) of the patients transplanted beyond 5 years are still alive.
Conclusion: Autologous SCT is feasible and a safe treatment modality for MM patients older than 65 years of age. This treatment modality needs to be evaluated further in prospective randomized clinical trials.

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CYTOGENETICS AND FLUORESCENCE IN SITU HYBRIDIZATION (FISH) CHANGES BEFORE AND AFTER THERAPY AND TRANSPLANT IN PATIENTS WITH MULTIPLE MYELOMA

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Background: Multiple Myeloma (MM) has a very heterogeneous prognosis. Many studies suggested that specific chromosomal changes are of prognostic significance in patients with MM. Poor risk include t(4;14), t(14;16),t(14;20), deletion p53, deletion 13 and hypodiploidy. Changes of genetics during course of treatment and outcome are not well studied. 132 cases of Multiple Myeloma transplants were retrospectively reviewed from January 1st, 2000 to August 1st, 2010. We looked at cytogenetics and fluorescence in situ hybridization (FISH) before starting treatment, before and after transplant.
Results: Out of 132 patients, 84.1% had Auto stem cell transplant and 24 (15.9%) had Allo stem cell transplant. Mean age at diagnosis was 54.6 (24-76). Patients with stage I-II were 28.2%, the rest had stage III. 35 patients had monosomy or deletions of chromosome 13 (ch13) detected by FISH at diagnosis or any point during their treatment. Of these, 11 patients had ch13 abnormality detected by FISH during the course of treatment not at time of diagnosis. 3 (2.3%) patients had abnormalities of ch13 detected by cytogenetics. 11 patients had p53 deletion. It was detected in 8 patients before transplant and was still detectable in 3 out of those 8 patients during therapy and transplant. Another 3 patient had p53 deletion detected only after transplant and was not detected before. 11 patients had complex genetics at around time of diagnosis and 25 patients had complex genetics detected just before and after time of transplant. One patient had t(4;14). By time of analysis, there were 57 (43.2%) death and 75 (56.8%) patients who were still alive. 80 (60.6%) patients had a relapse at one point. Median time to relapse (days) was 945 (251-9848). After dividing patients with high risk genetics at any point during there treatment before or after transplant .and standard risk, which includes everybody else, we found a significant association between risk and death ($p = 0.001$).
Conclusion: In this small group of 132 patients with MM who had stem cell transplant in the last ten years from a single center we have some data that may suggest high risk genetics detected at any point during therapy may affect prognosis. This supports the need to monitor genetics at diagnosis and during therapy. Since this is a small group, further studies involving larger cohort of patients need to be designed to confirm these results and study the effect of changes of genetics during treatment of MM.

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SKELETAL CT SCAN IS MORE SENSITIVE THAN SKELETAL SURVEY DURING THE PRE-TRANSPLANT EVALUATION FOR MULTIPLE MYELOMA PATIENTS BUT HAS NO PROGNOSTIC SIGNIFICANCE

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Skeletal survey continues to be the gold standard radiologic method for the detection of lytic lesions in multiple myeloma (MM) patients. CT scans, MRI or PET scans have been used to evaluate specific symptoms. In our institution, we have used both skeletal non-contrast CT scan and skeletal survey to evaluate for bone disease during the pre-transplant evaluation of MM patients. Due to lack of billing code for such test, the charges have been generated under the code for CT scan of the abdomen or the spine. Our aim was to assess the differences between the two modes of x-rays and to evaluate the impact on progression –free (PFS) and overall survival (OS) after stem cell transplant. We retrospectively reviewed the medical records of patients from our transplant registry that underwent stem cell transplant (SCT) between January 2005 and December 2008. Total of 154 patients were reviewed and 70 patients had the two studies done during the pre-transplant evaluation. The following data was collected: age, gender, stage of disease, albumin, β2-microglobulin, cytogenetics and FISH results, time to relapse, and time to death. Patients were divided into two groups for comparison: those who had differences between CT scan and skeletal survey findings versus those who did not. The results show that CT scan had more findings than the skeletal survey in 60% of the patients. These

findings included lytic lesions, pathological fractures or compression fractures of vertebral bodies that were not seen well by the skeletal survey. However, there were no significant differences in the median PFS or OS between the two patient groups. There were total of 9 patients that had no bony lesions in either the survey or the CT scan and their PFS and OS were not different either. We conclude that CT scan of the skeleton is more sensitive in defining existing bony lesions in MM patients at diagnosis, although these extra findings may not have any impact on the PFS or OS of patients undergoing SCT. The CT scan findings may have implications to palliative and supportive care treatments for these patients.

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FEWER PULLS REQUIRED WHEN USING A POWERED BONE MARROW BIOPSY SYSTEM TO OBTAIN CORE SAMPLES IN THE MULTIPLE MYELOMA PATIENTS POPULATION

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Introduction: A study was conducted to compare a new powered bone marrow sampling device to traditional manual bone marrow sampling devices. The specific objectives of the study were to examine the number of passes required to obtain a satisfactory bone marrow core sample and measure the length of samples obtained from each pull, using each device-type; and compare the results.

Methods: All patients had been diagnosed with multiple myeloma and had undergone previous bone marrow biopsy procedures. Clinicians were already well experienced using the manual device, but had only limited experience with the powered device. Following consenting procedures and local anesthetic administration, 2 biopsy procedures were performed unilaterally on each patient; one using the traditional manual device and one using the powered device. The manual device was a Jamshidi 11 gauge × 4 inch needle (Cardinal Health, Dublin, OH). The OnControl powered device included an 11 gauge, 102cm needleset (OnControl, Vidacare Corporation, Shavano Park, TX). The device-type for the first procedure was alternated from one patient to the next. Data collected included the core specimen length obtained for analysis, and the number of pulls required for a satisfactory specimen—defined by pathologists as a core sample at least 1.0cm in length. An "ideal" specimen was defined by pathologists as one with a length of ≥ 1.7cm. Pathology graded specimens as Satisfactory, Unsatisfactory, or Limited. For study purposes, up to 3 passes were allowed to obtain core specimens. Results were compared between device-types and pull sequence. Data analysis, including descriptive statistics, *t*-tests, and Chi-square analysis was performed using SPSS Statistics 19.0 software (SPSS, Inc. Chicago, IL), with an alpha level of 0.05.

Results: Over a 30-day period, double biopsy procedures were performed for 20 patients by 4 medical clinicians (1 nurse and 3 medical assistants). See Table for specific results.

Conclusions: Study results suggest that, for multiple myeloma patients, the Powered bone marrow biopsy device may be preferable to traditional Manual devices. This is due to the ability of operators to consistently obtain ideal or adequate core biopsy specimens with only one pass. Fewer passes means faster procedures and may result in a reduction in pain to the patient, as well as less fatigue to the clinician/operator.

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SUCCESSFUL AUTOLOGOUS STEM CELL TRANSPLANT FOLLOWING A COMBINED HEART-KIDNEY TRANSPLANTATION FOR AL AMYLOIDOSIS

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Background: Simultaneous cardiac and renal involvement is associated with a particularly poor prognosis in patients with AL amyloidosis. High-dose melphalan followed by autologous stem cell transplantation (ASCT) offers the best chance for long-term survival in patients with AL amyloidosis. Eligibility criteria for ASCT differ between hematologic centers, because this treatment is associated with high levels of mortality, which are increased by cardiac and/or renal involvement. However, successful ASCT was reported after cardiac and renal transplantation.

Case Report: We report a case of a successful ASCT following combined heart and kidney transplantation in a patient with systemic AL amyloidosis. The recipient was a 61-year-old man with end-stage renal failure associated with restrictive cardiomyopathy secondary to AL amyloidosis. On presentation, cardiac biopsy showed cardiac amyloid involving the intramural arteries and interstitium and kidney biopsy showed renal amyoid with lambda light chain deposition. Initial bone marrow biopsy showed a 40-50% cellular marrow with 4% plasma cells and serum lambda light chains were elevated at 37.5 mg/ml (5.7-26.3). One year after presentation, he underwent a successful combined heart and kidney transplant. His post-transplant course has been unremarkable except for ureteral leak that required surgical revision. Immune suppression was maintained with tacrolimus and mycophenolate mofetil. Four months after, he received 100 mg/m2 melphalan on D-3 followed by ASCT. The infused stem cells dose was 7.33×10^6/kg (which was half of what was collected). Mycophenolate dose was reduced to allow engrafment and patient was started on growth factors by D+7. Immediate post-transplant course was complicated by neutropenic fever secondary to streptococcus viridans bacetermia which was successfully treated with. Patient had successfully engrafted by D+12 and was discharged from the hospital by D+17. One month after discharge of the hospital, he continues to do well and didn't require any blood product support.

Discussion: ASCT following combined heart and kidney transplant is safe and feasible. We await to observe long-term outcomes though.

Table 1. Study Results

Results by Device-Type	Manual	Powered	p-value
Mean number of passes for procedure	1.95 ± 0.95	1.05 ± 0.22	<0.001†
Core sample obtained on first pass	55%	97%	<0.001†
Mean biopsy core length (mm)	1.11 ± 0.59	1.60 ± 0.36	0.003†
Ideal length core sample obtained on first pass	20%	55%	0.048†
Pathology graded core sample satisfactory or limited	85%	85%	0.889
Results by Pull Sequence	1st	2nd	p-value
Mean number of passes for procedure	1.55 ± 0.89	1.45 ± 0.76	0.704
Core sample obtained on first pass	65%	70%	0.710
Mean biopsy core length (mm)	1.67 ± 0.57	1.77 ± 0.35	0.507
Ideal length core sample obtained on first pass	30%	45%	0.257
Pathology graded core sample satisfactory or limited	80%	90%	0.637

†indicates statistical significance